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10/024,215	12/21/2001	Ryoma Oami	Q67860	9094

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EXAMINER	
VO, TUNG T	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/024,215	OAMI, RYOMA	
	Examiner	Art Unit	
	TUNG T. VO	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *25-32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 25-32 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the newly submitted claims 25-32 direct to an apparatus of a moving picture object apparatus of carrying out the method of coding an object based on the shape information of the object that is different from the original claimed invention, which directs to a moving picture encoding system for encoding a object data consisting of time series sequence of video object plane (VOP) or video frame.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 25-29 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Arguments

2. Applicant's arguments, see the remarks, filed 10/15/2004, with respect to the rejection(s)of claim(s) 1-24 under U.S.C 102 to Ryoo have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sun et al. (US 5,790, 196).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Peak (US 5,847,766).

Re claim 20, Peak discloses a moving picture encoding method (fig. 1) for encoding each frame of moving picture sequences while conducting bit rate control with respect to each section of the frame, comprising the steps of:

calculating an encoded frame allocatable bit number that is the total number of allocatable bits for uuencoded frames in a certain period of time (col. 6, lines 23-39, e.g. the total sum of the block target bits in the i-th macroblock in the frame that is calculated by equation (5) and interpreted as the total number of allocatable for un-coded frames as input video signal) by subtracting (BERROR = TBFRAME – EBFRAME) the number of generated bits for the encoded frames in the certain period of time (col. 5, lines 55-67, e.g. a frame bit generation quantity, EBFRAME, wherein all macro-blocks in the frame are quanitzed (encoded)) from the total number of allocatable bits for the frames in the certain period of time (10, 12, 18, 20 and 24 of fig. 1, see also col. 6, lines 40-53); estimating the number of generated bits for all the sections in the uncoded frames (EBFRAME 20 of fig. 1); calculating a target bit number (22 of fig. 1) for each section in the next frame to be encoded by allocating the uncoded

frame allocatable bit number; and encoding the frame (fig. 1); sequentially for each of frames in the certain period of time.

Re claim 21, Peak discloses wherein a constant (24, and 26 of fig. 1) which can make a variation in quantization fineness among objects is used when the target bit number is calculated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryoo (US 5,990, 957) in view of Sun (US 5,790,196).

Re claims 1-2, 5-6, and 19-20, Ryoo discloses a moving picture encoding system (fig. 1) for encoding moving picture sequences with respect to each object, comprising:

a coding means (15 and 11 of fig. 1) for encoding object picture data consisting of time series sequences of video object planes (VOPs) (11 of fig. 1), each of which is a picture image of the object at a point of time, and shape information data indicating the shape of the object in each VOP while conducting bit rate control so that the number of generated bits for each VOP meets a target bit number (15 of fig. 1), and outputting coding information including a quantization parameter used in encoding and the generated bit number along with obtained bit streams (col. 3, line 55-col. 4, line 32); and outputting the result as area data (col. 5, line 44-col.

5, line 43); a predictive area calculating parameter extracting means (24 and 25 of fig. 2) for obtaining a function that indicates temporal variations in the area of the object based on the history of the area data (25 of fig. 2), and outputting a parameter specifying the function or a predictive value of the area obtained by the function (24 of fig. 2) as a predictive area calculating parameter (col.6, line 59-col. 9, line 5); a bit number model parameter calculating means (26, 27 and 29 of fig. 2) for calculating a parameter used in modeling the generated bit number per unit area of the object based on the coding information (col. 4, lines 59-67), the generated bit number and the area data, and outputting the result as a bit number model parameter (27 of fig. 2, see col. 1, lines 1-3, and 8-14); a predictive bit number calculating parameter extracting means (28 of fig. 2) for obtaining a function that indicates temporal variations in the bit number model parameter based on the history of the bit number model parameter, and outputting a parameter specifying the function or a predictive value of the bit number model parameter obtained by the function as a predictive bit number calculating parameter (col. 9, lines 27-67); and a target bit number calculating means (29-31 of fig. 2) which performs a series of processes calculating a target bit number for the next VOP to be encoded (col. 10, lines 1-40), and outputting the target bit number; sequentially for each of VOPs in the certain period of time (29 and 32 of fig. 2); a storing means (14 of fig. 1, note a VOP memory temporarily stores VOPs) for temporarily storing object picture data consisting of time series sequences of video object planes (VOPs), each of which is a picture image of the object at a point of time, and shape information data indicating the shape of the object in each VOP.

It is noted that Ryoo does not particularly discloses an area calculating means (21 and 22 of fig. 2) means calculating the area of the object in each VOP based on the shape information data; and calculating an un-coded VOP allocatable bit number that is the total number of allocatable bits for uncoded VOPs in a certain period of time based on allocatable bit number information indicating the total number of allocatable bits for the VOPs in the certain period of time and the number of generated bits for the encoded VOPs in the certain period of time as claimed.

However, Sun teaches an area calculating means for calculating the area of the object in each VOP based on the shape information data (fig. 1, e.g. identifying VO1, VO2 in the VOP 1, VOP2, wherein the size of VO1 or VO2 is obtained for bit calculation. Note the **specification of the invention describes that the size of object as area); and means for** calculating an un-coded VOP allocatable bit number that is the total number of allocatable bits for uncoded VOPs in a certain period of time based on allocatable bit number information indicating the total number of allocatable bits for the VOPs in the certain period of time and the number of generated bits for the encoded VOPs in the certain period of time (col. 8, lines 64-68, e.g. subtracting (difference) the actual number of header bits for all objects (VO1, VO2) in a previous frame is interpreted as the number of generated bits for the encoded VOPs (VOP1, VOP2); and the total number of target bits available for those objects (VO1, VO2) in an instant frame (unencoded frame or input video frame) is interpreted as the total number of allocatable bits for uncoded VOPs (VOP1, VOP2)).

Therefore, taking the teachings of Ryoo and Sun as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Sun into the encoding system of

Ryoo for the same purpose of performing the subtracting function as claimed. Doing so would provide an improved bit rate control system based on a quadratic rate distortion model.

Re claim 3, Ryoo further discloses wherein a moving picture sequence may includes a plurality of objects (fig. 5A and 5B).

Re claim 4, Ryoo further discloses wherein a moving picture sequence may include a plurality of objects (MPEG-4 standard, fig. 5A and 5B).

Re claims 7-10, Ryoo further discloses the bit number model parameter is a complexity index per unit area of the picture (col. 5, lines 1-3, note quantization matrix and complexity classifier 21 of fig. 2); and the target bit number calculating means calculates the target bit number based on a product of a predictive value of the complexity index and a predictive value of the area data (col. 10, lines 1-40).

Re claims 11-14, Ryoo further discloses the bit number model parameter calculating means (27 and 29 of fig. 2) calculates the bit number model parameter with respect to each VOP type; and the predictive bit number calculating parameter extracting means (28 of fig. 2) calculates the predictive bit number calculating parameter with respect to each VOP type (col. 9, lines 54-67).

Re claims 15-18, and 21 -22, Ryoo further discloses wherein a constant, which can make a variation in quantization fineness among objects, is used when the target bit number is calculated (col. 10, lines 41-50).

Re claims 23 and 24, Ryoo discloses the moving picture encoding system is carrying out the method for encoding moving picture sequences with respect to each object, so the encoding system is inherently have a program for conducting a computer to execute the encoding method.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the previous Office Action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TUNG T. VO whose telephone number is 703-308-5874. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris. Kelley can be reached on 703-305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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